

How ball-tampering favours bowlers

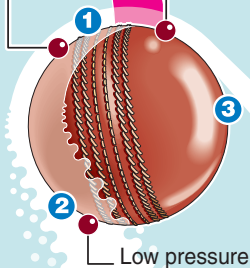
By keeping one side of a cricket ball shiny and smooth, bowlers can swing the ball in the air. After 60-70 overs the surface of the ball becomes battered and reverse swing becomes possible. The ball was 53 overs old when Australian umpire Darrell Hair penalized Pakistan for ball-tampering

Normal out-swing



Rough side

Smooth side



- 1. Seam:** Acts like rudder, producing turbulence on side that seam is angled toward
- 2. Rough side:** Air flow separates from surface of ball at rear
- 3. Smooth side:** Air flow separates earlier – Higher air pressure on smooth side swings ball in direction of seam

Reverse in-swing



Possible when ball is delivered at high speed

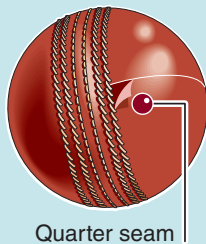


- 4. Rough side:** As ball deteriorates, rough side takes on characteristics of shiny side
- 5. Turbulence:** Affects both sides of ball
- 6. Reverse swing:** Air clings to smooth side for longer, creating low pressure zone. Higher pressure on rough side swings ball inwards

Fair and unfair play



Law 42.3b: Unfair to interfere with surface or seams, or alter condition of ball in any way



Allowed: Fielders can polish, clean or dry ball, but nothing more

Tampering: Sucked sweets or mints, lip gloss, Vaseline or hair wax all used to make smooth side shine. Gouging with bottle top or finger nail, or rubbing grit into quarter seam make rough side rougher